



---

# CDF Operations Report

JJ Schmidt

1-Mar-2004

All Experimenters' Meeting



## CDF RECENT HISTORY

---

- COT tracking chamber has shown more aging (reduction in gain in inner Super Layers) than anticipated in Run I I a. The aging has not been uniform in time or luminosity or spatially within the chamber.
- Work through January was unable to identify cause of aging or reduce the rate of aging.
- Friday February 13<sup>th</sup>, CDF turned off the HV on SL1,2 and reduced the HV (gain) on SL3,4,5. The fast tracking trigger (XFT) was changed to mask axial SL2 on and to allow 3 misses (out of 12) instead of 1 miss in SL4.
- Task force with outside experts was formed to augment studies and work being done by CDF experts.



## CDF RECENT HISTORY (cont'd)

---

- Feb. 17<sup>th</sup> – Nitrogen was added to the COT argon-ethane-alcohol gas mix and silicon system/cooling was turned off.
  - cold spot causing alcohol aerosol?
  - chamber recovery after nitrogen flush?
- Feb. 26<sup>th</sup> – COT returned to “normal” gas mix, silicon was turned back on, and HV returned to the “compromised state.” (low gain, low pain?)
- Roser Plumbing Inc. will attempt to reverse the gas flow at end of current store (more data on problem and recover some “aging budget” from the z spatial dependence.)
- CDF will run in this condition until 10 day shutdown.



## 10 Day Shutdown ( March 15 ? )

---

- COT Studies (if shutdown starts March 15, otherwise??)
  - Pull and replace 1 or 2 wire planes for studies.
  - Roser Plumbing Inc. will install collision hall plumbing that will eventually be used to re-circulate gas at 20-50 times original design flow rate.
- Tevatron folks will re-align quads (local correctors are running close to max, CDF would like slope of beam corrected if possible [impacts svt resolution])
- List of many other work items in collision hall and on DAQ.



# STORE SUMMARY

Store	Start Date	Duration (hours)	Inst Lum Initial e30 cm-2 s-1	Int. Lum Delivered nb-1	Live Lum nb-1	Detector Status	Tevatron Terminate
3252	2/22	32.0	59.8	2,946	2,674 90.8%	Sili-warm COT full HV N <sub>2</sub> Gas Mix	OK
3254	2/23	37.0	53.2	2,894	2,522 87.2%	Same as above	OK
3256	2/25	21.5	62.0	2,492	1,778 71.4%	See below	Abort A4 VV
3261	2/27	40.7	71.6 !	3,397	2,888 73.3%	Compromised COT	OK
3263	2/29	ongoing	51.1	>2,500	>2,300 91%	Compromised COT	
Total		>155		>14,800	>12,200 ~82%		

Compromised COT => SL1,2 off;  
SL3,4,5 reduced gain

STORE 3256 Detector Status: Transition back to  
Silicon Cold/on, Compromised COT HV, no N2 gas mix



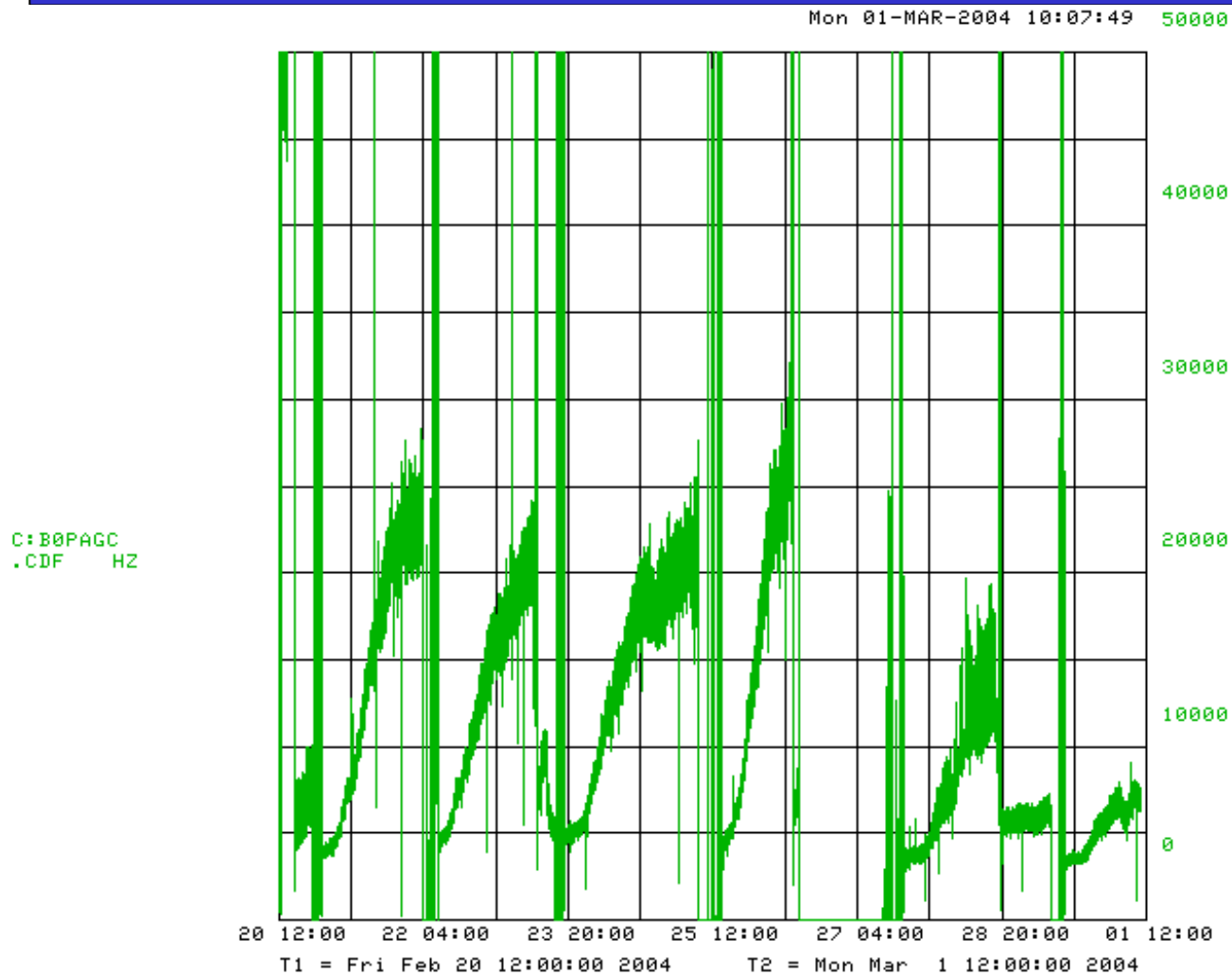
# CDF Efficiency Issues

---

- COT studies with different gas mixture and silicon cooling state have put both COT and Silicon systems through transition periods during the last 2 weeks. CDF has used some of this time to push forward work on trigger tables and L2 system for both higher utilization of future luminosity and to re-optimize trigger system while COT is running in compromised state.
- During previous store (3261), we returned to a very stable configuration.
- Earlier in month, efficiency was reduced during stores where Tevatron rescraped beam to reduce abort gap losses below the CDF Silicon 20 kHz safety limit. Tevatron has slipped back into mode where losses are below limit but exhibiting an unusual behavior.

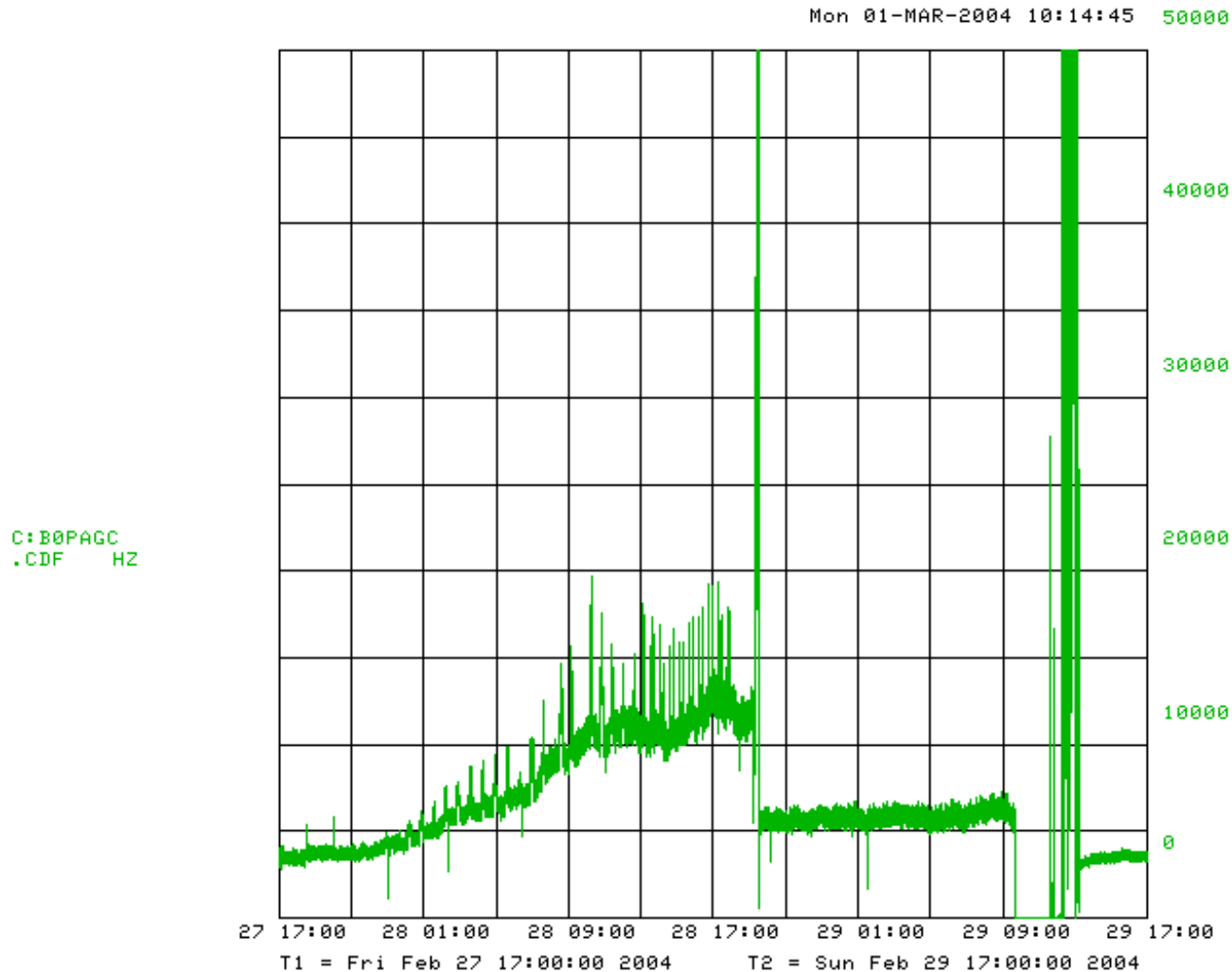


# ABORT GAP LOSSES SINCE FEBRUARY 20



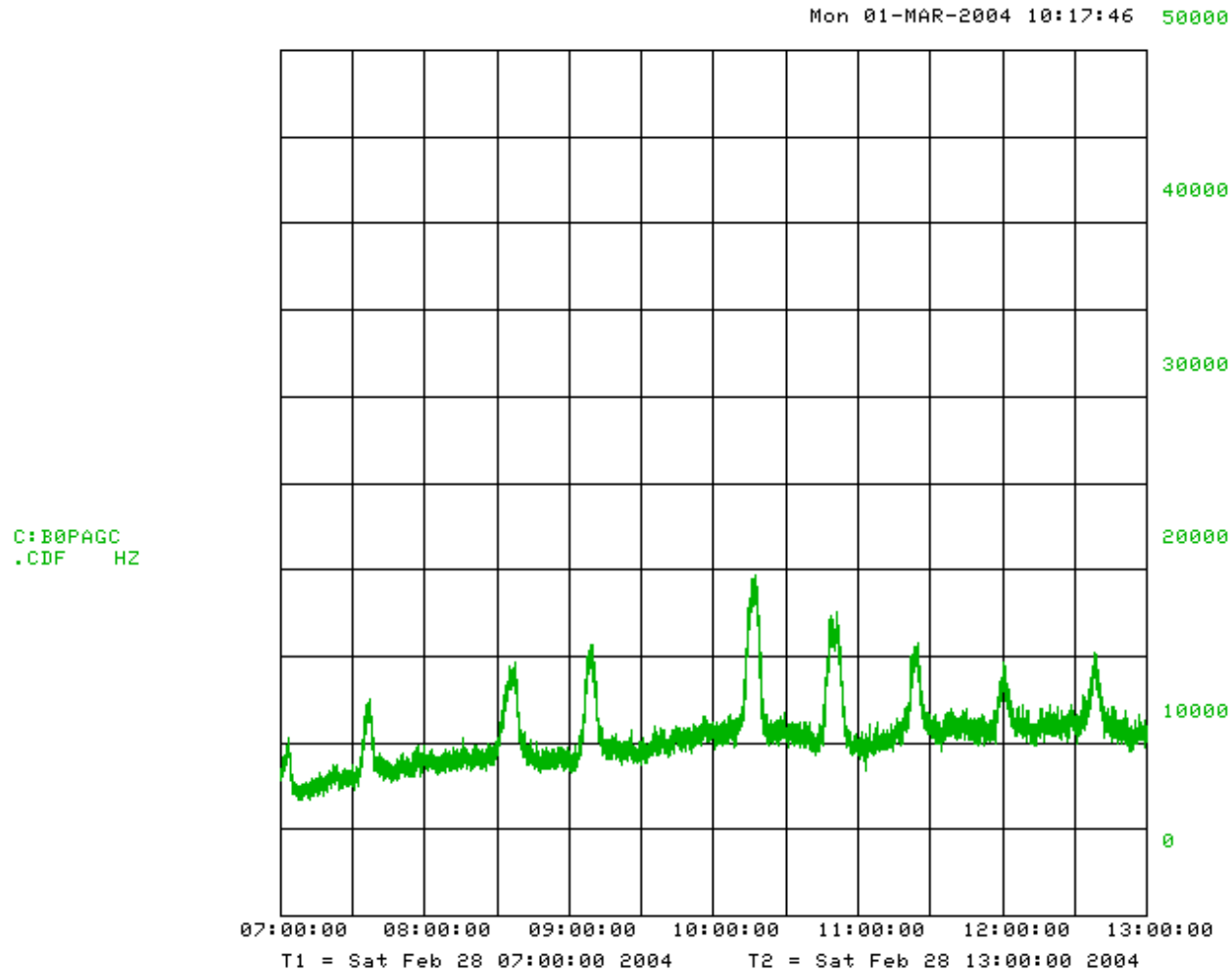


# ABORT GAP LOSSES LAST TWO STORES



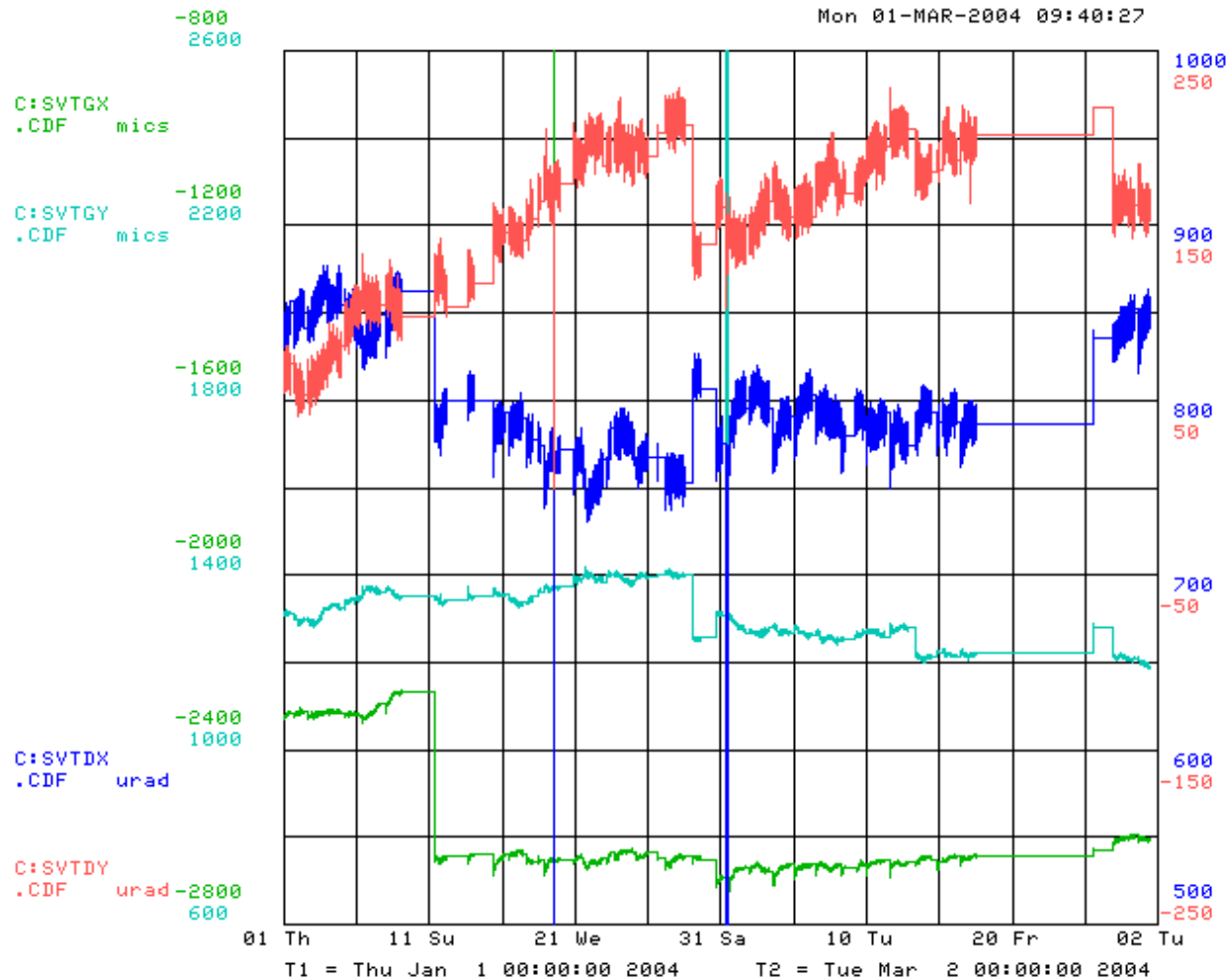


# ABORT GAP LOSSES STORE 3261 (partial)



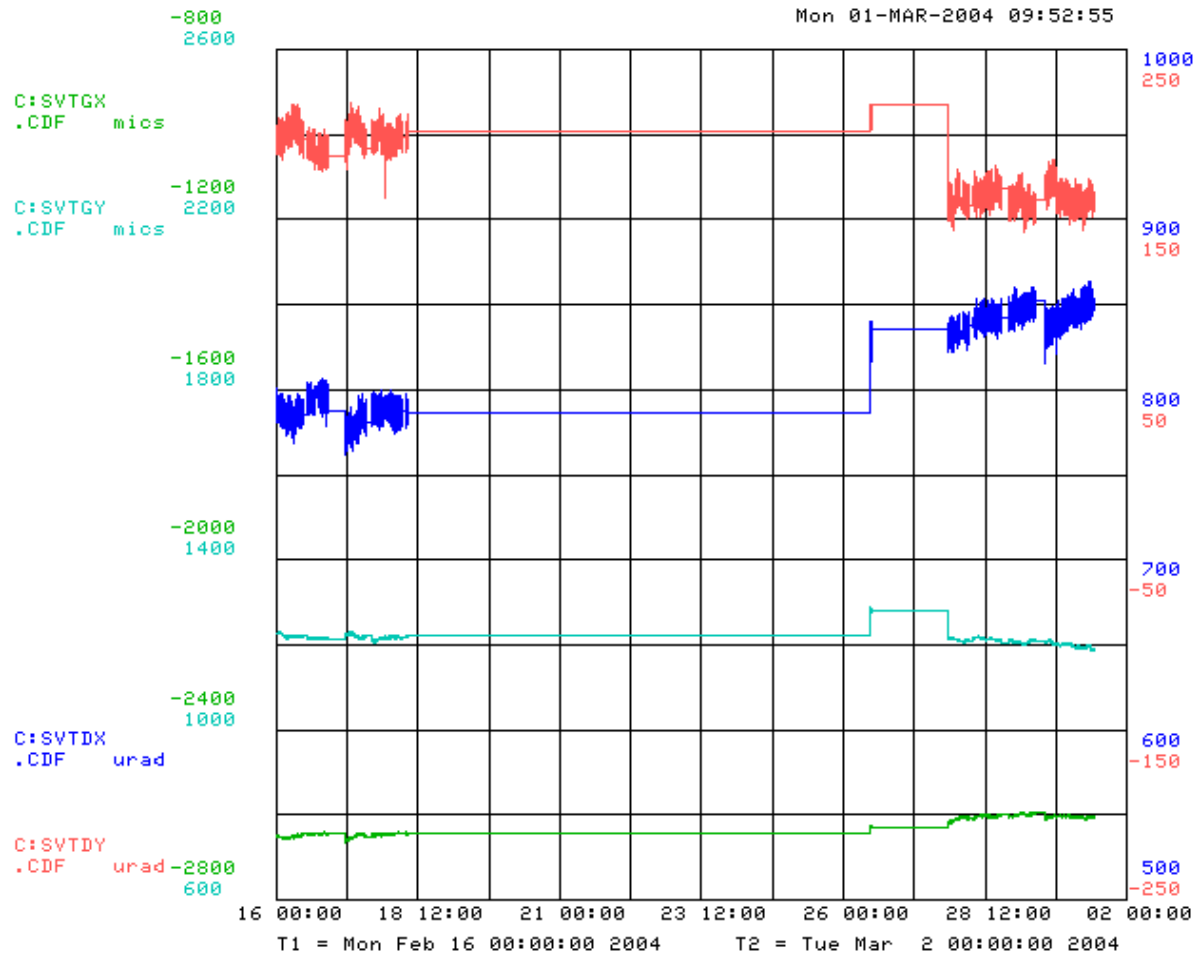


# SVT VERTEX POSITION AND SLOPE (starting 1/1/04)





# SVT VERTEX POSITION AND SLOPE (starting 2/16/04)





## COT GAS PLUMBING (COLLISION HALL)

